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Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A computer-implemented method of dynamically scheduling an arbitrary number of resources from among a plurality of resources of a work-producing system, wherein the work-producing system comprises a pharmacy, said method comprising the steps of:

(a) in a computer system, sorting, in a predetermined order, available resources by a an arbitrary number of tasks from among a plurality of tasks of the work-producing system performable per resource, and rate per task, and determining at least one queue responsive to said sorting, wherein the tasks are subject to an arbitrary number of constraints from among a plurality of constraints of the work-producing system, wherein the rate per task characterizes the processing of pharmaceutical orders processed in the at least one task for a time period, the at least one task including reviewing a pharmaceutical order, dispensing a pharmaceutical prescription as part of the pharmaceutical order, and verifying the pharmaceutical order; and

(b) assigning the available resources to the at least one task from among a plurality of tasks of the work-producing system subject to at least one constraint from among a plurality of constraints of the work-producing system,

wherein said sorting step (a), and said assigning step (b) are performed according to a resource allocation model.

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wherein the resource allocation model includes entities with variable attributes having variable quantities that transform through at least one network of nodes; and

wherein each node of the at least one network of nodes includes an associated set of attributes and parameters, the attributes include the resource; each node or at least one network of nodes exists for a pre-determined time period.

2. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, further comprising the step of redetermining the at least one queue after assignment of the available resources, and designating the assigned resource unavailable until a predetermined time when the assigned available resources expires.

3. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, further comprising the step of incrementing time to time of a next event.

4. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the at least one task constraint includes maximum resource capacity, defined start and end times, and scheduled down time.

5. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the at least one task constraint includes at least one team assignment constraint defining resource attributes, and the available resources are assigned to the at least one task until the at least one team assignment constraint is satisfied.

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6. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein said assigning step (b), further comprises the steps of assigning the available resources to the at least one task for a maximum time of task, and removing the at least one task from a resource skill set.

7. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the at least one constraint includes an end of shift constraint, and wherein the available resources are not assigned to the at least one task when the assignment violates the end of shift constraint.

8. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the predetermined order comprises an ascending order.

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 10, wherein the attributes are qualitatively defined through at least one of nominal, graphical and symbolic conventions.

13. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 12, wherein the available resources include the attributes of the

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nodes, and the available resources undergo transformational processes arriving at least one arbitrary state or passing through a series of states that may become the attributes of the resources.

14. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 10, wherein the parameters are specified as at least one of inputs, outputs, capacities, operational processes, functional behaviors, movement logics, and other dynamic parameters.

15. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 10, wherein the resource allocation model stores at least one of historical values, theoretical values, the attributes and constellations of the nodes, and wherein the resource allocation model provides multiple bases of comparison for monitoring, measuring, and evaluating real-time operational data and operational performance for management functions.

16. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 10, wherein the resource allocation model includes significance and performance criteria, associated tableaux and scenarios, and wherein abstract model elements are stored as at least one of the parameters and the attributes, and as at least one of functional, logical, graphical and symbolic forms.

17. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the available resources are characterized by the

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following information:

- person identifier, person name, person type, shift assignment by day of week, task preference,
- shift name, shift start time, shift end time, lunch start, break 1 start, break 2 start,
- person type categories, eligible tasks,
- task name, rate per task, task capacity, task color for Gantt chart, flow percentages between tasks,
- projected incoming volume by task and time, and
- start of day queues in each task.

18. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein said assigning step (b) assigns the available resources using at least one of the following outputs:

- people allocation: number of people assigned to each task for each time period,
- volume data: number of RX's processed in each task for each time period,
- queue data: queue length for each task area by time period, and
- Gantt chart: person task assignment for each time period.

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19. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein said assigning step (b), further comprises the steps of assigning the available resources to a varying set of tasks having varying individual rates.

20. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein said assigning step (b), further comprises the steps of assigning the available resources to the at least one task with a work flow between tasks following a Markov Chain.

21. (Previously Presented). A method of dynamically scheduling an arbitrary number of resources according to claim 3, wherein the next event includes at least one of: a resource or task that becoming subsequently available, incoming work, a queue reaching zero, and a minimum time in the task.

22. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, further comprising the step of repeatedly performing said steps (a) - (b) until the end of a predetermined time period is reached.

23. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, further comprising the step performing the at least one task responsive to the resource assigned in said assigning step (b).

24 - 26. (Cancelled)

27. (Previously Presented) A method of dynamically scheduling an arbitrary number of

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resources according to claim 1, wherein the filling further includes at least one of: vertical fill, baker fill, prepack fill, front fill, narcotics fill, control fill, and insulin syringe fill.

28. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the tasks further include at least one of: managed care review, Dr. call verification, eligibility verification, drug utilization review, mail handling, phone refill handling, phone prescription handling, safing, label generation, checking, packing, manifesting, and wandong.

29. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, further comprising the step of normalizing the at least one queue by dividing a current task queue by an average rate of the available resources for each task in the current task queue.

30. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the available resources are assigned to the at least one task and associated with a predetermined queue.

31. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources from among a plurality of resources of a pharmacy system, said method comprising the steps of:

(a) in a computer system, sorting, in a predetermined order, available resources by a an arbitrary number of tasks from among a plurality of tasks of the pharmacy system performable

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per resource, and rate per task, and determining at least one queue responsive to said sorting, wherein the tasks are subject to an arbitrary number of constraints from among a plurality of constraints of the pharmacy system, wherein the rate per task characterizes the number of pharmaceutical orders processed in the at least one task for a time period, the at least one task including reviewing a pharmaceutical order, dispensing a pharmaceutical prescription as part of the pharmaceutical order, and verifying the pharmaceutical order;

(b) assigning the available resources to the at least one task from among a plurality of tasks of the pharmacy system subject to at least one constraint from among a plurality of constraints of the pharmacy system; and assigning the available resources to a varying set of tasks having varying individual rates and variable individual demands, wherein the at least one task is performed at least one of manually and automatically,

wherein said sorting step (a), and said assigning step (b) are performed according to a resource allocation model,

wherein the resource allocation model includes entities with variable attributes having variable quantities that transform through at least one network of nodes; and

wherein each node of the at least one network of nodes includes an associated set of attributes and parameters, the attributes include the resource; each node or at least one network of nodes exists for a pre-determined time period.

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32. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the available resources are assigned to the at least one task and associated with a predetermined queue.

33. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, further comprising the step of redetermining the at least one queue after assignment of the available resources, and designating the assigned resource unavailable until a predetermined time when the assigned available resources expires.

34. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, further comprising the step of incrementing time to time of a next event.

35. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the at least one task constraint includes maximum resource capacity, defined start and end times, and scheduled down time.

36. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the at least one task constraint includes at least one team assignment constraint defining resource attributes, and the available resources are assigned to the at least one task until the at least one team assignment constraint is satisfied.

37. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein said assigning step (b), further comprises the steps of

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assigning the available resources to the at least one task for a maximum time of task, and removing the at least one task from a resource skill set.

38. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the at least constraint includes an end of shift constraint, and wherein the available resources are not assigned to the at least one task when the assignment violates the end of shift constraint.

39. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the predetermined order comprises an ascending order.

40. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 32, further comprising the step of normalizing the at least one queue by dividing a current task queue by an average rate of the available resources for each task in the current task queue; wherein the predetermined queue comprises a largest normalized queue.

41. (Cancelled).

42. (Cancelled)

43. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 31 43, wherein the attributes are qualitatively defined through at least one of nominal, graphical and symbolic conventions.

44. (Previously Presented) A method of dynamically scheduling an arbitrary number of

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resources according to claim 43, wherein the available resources include the attributes of the nodes, and the available resources undergo transformational processes arriving at least one arbitrary state or passing through a series of states that may become the attributes of the resources.

45. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 43, wherein the parameters are specified as at least one of inputs, outputs, capacities, operational processes, functional behaviors, movement logics, and other dynamic parameters.

46. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 31 44, wherein the resource allocation model stores at least one of historical values, theoretical values, the attributes and constellations of the nodes, and wherein the resource allocation model provides multiple bases of comparison for monitoring, measuring, and evaluating real-time operational data and operational performance for management functions.

47. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 31 44, wherein the resource allocation model includes significance and performance criteria, associated tableaux and scenarios, and wherein abstract model elements are stored as at least one of the parameters and the attributes, and as at least one of functional, logical, graphical and symbolic forms.

48. (Previously Presented) A method of dynamically scheduling an arbitrary number of

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resources according to claim 31, wherein the available resources are characterized by the following information:

- person identifier, person name, person type, shift assignment by day of week, task preference,
- shift name, shift start time, shift end time, lunch start, break 1 start, break 2 start,
- person type categories, eligible tasks,
- task name, rate per task, task capacity, task color for Gantt chart, flow percentages between tasks,
- projected incoming volume by task and time, and
- start of day queues in each task.

49. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein said assigning step (b) assigns the available resources using at least one of the following outputs:

- people allocation: number of people assigned to each task for each time period,
- volume data: number of RX's processed in each task for each time period,
- queue data: queue length for each task area by time period, and
- Gantt chart: person task assignment for each time period.

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50. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein said assigning step (b), further comprises the steps of assigning the available resources to the at least one task with a work flow between tasks following a Markov Chain.

51. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 34, wherein the next event includes at least one of: a resource or task that becoming subsequently available, incoming work, a queue reaching zero, and a minimum time in the task.

52. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, further comprising the step of repeatedly performing said steps (a) - (b) until the end of a predetermined time period is reached.

53. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, further comprising the step performing the at least one task responsive to the resource assigned in said assigning step (b).

54. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the filling further includes at least one of: vertical fill, baker fill, prepack fill, front fill, narcotics fill, control fill, and insulin syringe fill.

55. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the tasks further include at least one of: managed care

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review, Dr. call verification, eligibility verification, drug utilization review, mail handling, phone refill handling, phone prescription handling, safety, label generation, checking, packing, manifesting, and wandling.

56. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, further comprising the step of normalizing the at least one queue by dividing a current task queue by an average rate of the available resources for each task in the current task queue.

57. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 31, wherein the available resources are assigned to the at least one task and associated with a predetermined queue.

58. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources from among a plurality of resources of a pharmacy system, said method comprising the steps of:

(a) in a computer system, sorting, in a predetermined order, available resources by an arbitrary number of tasks from among a plurality of tasks of the pharmacy system performable per resource, and rate per task, and determining at least one queue responsive to said sorting, wherein the tasks are subject to an arbitrary number of constraints from among a plurality of constraints of the pharmacy system, wherein the rate per task characterizes the number of pharmaceutical orders processed in the at least one task for a time period, the at least one task including reviewing a pharmaceutical order, dispensing a pharmaceutical prescription as part of

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the pharmaceutical order, and verifying the pharmaceutical order;

(b) assigning the available resources to at least one task from among a plurality of tasks of the pharmacy system with a predetermined queue subject to at least one constraint from among a plurality of constraints of the pharmacy system; and

(c) dynamically re-allocating the available resources at the end of a real time period, in a same day, for at least one task, including: repeating steps (a) and (b), re-determining the at least one queue after assignment of the available resources, and designating the assigned resource as unavailable until a predetermined real time when the assigned available resource expires,

wherein said sorting step (a), and said assigning step (b) are performed according to a resource allocation model,

wherein the resource allocation model includes entities with variable attributes having variable quantities that transform through at least one network of nodes; and

wherein each node of the at least one network of nodes includes an associated set of attributes and parameters, the attributes include the resource; each node or at least one network of nodes exists for a pre-determined time period.

59. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, further comprising the step of redetermining the at least one queue after assignment of the available resources, and designating the assigned resource unavailable until a predetermined time when the assigned available resources expires.

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60. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, further comprising the step of incrementing time to time of a next event.

61. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein the at least one task constraint includes maximum resource capacity, defined start and end times, and scheduled down time.

62. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein the at least one task constraint includes at least one team assignment constraint defining resource attributes, and the available resources are assigned to the at least one task until the at least one team assignment constraint is satisfied.

63. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein said assigning step (b), further comprises the steps of assigning the available resources to the at least one task for a maximum time of task, and removing the at least one task from a resource skill set.

64. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein the at least one task constraint includes an end of shift constraint, and wherein the available resources are not assigned to the at least one task when the assignment violates the end of shift constraint.

65. (Previously Presented) A method of dynamically scheduling an arbitrary number of

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resources according to claim 58, wherein the predetermined order comprises an ascending order.

66. (Cancelled)

67. (Cancelled)

68. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 58 66, wherein the attributes are qualitatively defined through at least one of nominal, graphical and symbolic conventions.

69. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 68, wherein the available resources include the attributes of the nodes, and the available resources undergo transformational processes arriving at least one arbitrary state or passing through a series of states that may become the attributes of the resources.

70. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 58 66, wherein the parameters are specified as at least one of inputs, outputs, capacities, operational processes, functional behaviors, movement logics, and other dynamic parameters.

71. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 58 66, wherein the resource allocation model stores at least one of historical values, theoretical values, the attributes and constellations of the nodes, and wherein the resource allocation model provides multiple bases of comparison for monitoring, measuring,

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and evaluating real-time operational data and operational performance for management functions.

72. (Currently Amended) A method of dynamically scheduling an arbitrary number of resources according to claim 58 66, wherein the resource allocation model includes significance and performance criteria, associated tableaus and scenarios, and wherein abstract model elements are stored as at least one of the parameters and the attributes, and as at least one of functional, logical, graphical and symbolic forms.

73. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein the available resources are characterized by the following information:

- person identifier, person name, person type, shift assignment by day of week, task preference,
- shift name, shift start time, shift end time, lunch start, break 1 start, break 2 start,
- person type categories, eligible tasks,
- task name, rate per task, task capacity, task color for Gantt chart, flow percentages between tasks,
- projected incoming volume by task and time, and
- start of day queues in each task.

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74. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein said assigning step (b) assigns the available resources using at least one of the following outputs:

- people allocation: number of people assigned to each task for each time period,
- volume data: number of RX's processed in each task for each time period,
- queue data: queue length for each task area by time period, and
- Gantt chart: person task assignment for each time period.

75. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein said assigning step (b), further comprises the steps of assigning the available resources to a varying set of tasks having varying individual rates.

76. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein said assigning step (b), further comprises the steps of assigning the available resources to the at least one task with a work flow between tasks following a Markov Chain.

77. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 60, wherein the next event includes at least one of: a resource or task that becoming subsequently available, incoming work, a queue reaching zero, and a minimum time in the task.

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78. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, further comprising the step of repeatedly performing said steps (a) - (b) until the end of a predetermined time period is reached.

79. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, further comprising the step performing the at least one task responsive to the resource assigned in said assigning step (b).

80. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein the filling further includes at least one of: vertical fill, baker fill, prepack fill, front fill, narcotics fill, control fill, and insulin syringe fill.

81. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, wherein the tasks further include at least one of: managed care review, Dr. call verification, eligibility verification, drug utilization review, mail handling, phone refill handling, phone prescription handling, safety, label generation, checking, packing, manifesting, and wandong.

82. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 58, further comprising the step of normalizing the at least one queue by dividing a current task queue by an average rate of the available resources for each task in the current task queue.

83. (Previously Presented) A method of dynamically scheduling an arbitrary number of

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resources according to claim 58, wherein the available resources are assigned to the at least one task and associated with a predetermined queue.

84. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the resources include at least one of: humans, machines, and teams.

85. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the tasks include at least one of: filling bottles, packaging bottles, opening pieces of mail, out-bound customer service calls, and in-bound customer service calls.

86. (Previously Presented) A method of dynamically scheduling an arbitrary number of resources according to claim 1, wherein the constraints include at least one of: physical, logistical, and temporal.

87-92 (Cancelled)